Plant Associations Among Adult Hippomelas

(Coleoptera: Buprestidae)

E. Gorton Linsley

Division of Entomology and Parasitology

University of California, Berkeley, California 94720

AND

Edward S. Ross

Department of Entomology

California Academy of Sciences, San Francisco, California 94118

Although the genus *Hippomelas* contains some of the largest and most striking buprestids in North America, relatively little is known of their biology. Yet at times the adults are very abundant and may be seen by the hundreds flying about shrubby plants in the desert or semi-arid southwestern United States and northern Mexico. However, they are usually most active in the warmest parts of the day and their readiness to take flight and agility in moving around the stems of larger plants makes feeding, mating and other activities difficult to observe except in the late afternoon or early evening.

The adults are known to be flower visitors and because many species have a yellow "pollinose" character to the integument it was long believed that this was simply pollen inadvertently brushed up from flowers. However, the powdery pattern, although variable, is too consistent, the beetles too large and the distribution over the surface too even to be inadvertent. Furthermore, some of the species which are most heavily "pollinose" visit the same flowers as those that are among the least heavily "pollinose." Vogt (1949), in commenting upon the Buprestidae of the Lower Rio Grande Valley of Texas, has not only helped to clarify this situation in *Hippomelas* but also where pulverulent character appears elsewhere in the Buprestidae by pointing out that it is a secretion (see below). His findings will probably be confirmed in future studies of the family.

The majority of the Buprestidae are believed to be host-specific in the larval stage, at least at the generic or family level (see, for example, Barr, 1971; Chamberlin, 1936; Knull, 1925; Vogt, 1949). Furthermore, among those species which visit flowers in the adult stage, there is a marked tendency among some of them to visit blossoms of the plant

The Pan-Pacific Entomologist 52: 272–285. October 1976

species which serve as hosts for the larvae especially in such genera as *Acmaeodera*, although this is by no means a general rule (cf. Beer, 1940, 1944; Linsley and Ross, 1940). As a result, it might be reasonable to suppose that the same correlation applies to some of the species of *Hippomelas*. However, the evidence on this point is mixed. In the hope of stimulating further studies on the subject we are presenting a summary of the published information known to us, together with a few original observations and adult plant associations derived from data on specimens in the collection of the California Academy of Sciences, San Francisco (CAS), the California Insect Survey, Essig Museum of Entomology, University of California, Berkeley (CIS) and the Department of Biology, Arizona State University, Tempe (ASU).

Appreciation is expressed to W. F. Barr and Gayle H. Nelson for reading the manuscript and providing helpful suggestions and to the latter for kindly identifying much of our material. D. S. Verity provided some useful records from his collection and Mont A. Cazier arranged to have specimens from Arizona State University made available. Juanita M. (Mrs. E. G.) Linsley ably assisted in making field observations and collections.

HIPPOMELAS (GYASCUTUS) CAROLINENSIS (HORN)

The original description of this species is correctly cited by Chamberlin as Horn (1883:288). The type locality given by Horn was Wilmington, North Carolina and was undoubtedly based upon erroneously labeled material. It was first recorded from the West (Grand Canyon, Arizona) by Townsend (1895).

The records at hand for plant associations for *H.* (*G.*) *carolinensis* are as follows: from the collection of Arizona State University (all in the San Simon Valley, Cochise Co., Arizona or the adjacent Chiricahua Mountains, det. Nelson): two miles northeast of Portal, June 18, 1961 (M. A. Cazier) and 8 miles NE of Portal in Turkey Creek Wash, June 10, 1960 (M. A. Cazier) on *Acacia greggii* and 2.5 miles northeast of Portal, September 6, 1960 (M. A. Cazier) and 5 miles northeast of Portal, July 13, 1965 (J. H. Davidson, J. M. Davidson and M. A. Cazier) on *Larrea tridentata*; from the California Academy of Sciences (det. Helfer), Cathedral City, Riverside Co., California, July 16, 1950, four on *Larrea* [*tridentata*], one on *Acacia greggii* (J. W. MacSwain), same locality, July 13, 1951, three on *Acacia greggii* (J. W. MacSwain and Ray F. Smith), Whitewater, Riverside Co., California, July 9, 1950, five on *Larrea tridentata* (T. R. Haig, P. D. Hurd, and H. M. Graham), Palm Springs, Riverside Co., California, July 16, 1950, five on *Larrea* [*triden-*

tata] (P. D. Hurd), Palms to Pines Highway, Riverside Co., California, elev. 1000 ft. May 28, 1940, one on *Larrea tridentata* (W. L. Swisher), Banner, [San Diego Co.], California June 25, 1953, cut from *Croton* root (Helfer collection), and Borego, [San Diego Co.], California, May 29, 1950, reared from *Encelia* root (Algert).

Records supplied by D. S. Verity include one example 3 miles west of Beaumont, Riverside Co., California, July 9, 1961 on *Eriogonum fasciculatum*, four at 2000 ft. elev., along highway 74, Santa Rosa Mtns., Riverside Co., California, June 17, 1961, on *Tamarix*, one same area 3500 ft. elevation, May 21, 1962, one 5 mi. south of Palmdale, Los Angeles Co., California, July 6, 1957, five 2 mi. southwest of Phelan, San Bernardino Co., California, June 14, 1959, and five specimens with the same data, July 16, 1960. These last four collections were all taken from *Juniperus californicus*.

HIPPOMELAS (GYASCUTUS) CASTANEUS HELFER

Described originally as a subspecies of *H. insularis*, *H.* (*G.*) *castaneus* is treated as a full species by Barr (1970). The type series consisted of three specimens from Angel de la Guardia Island, Gulf of California, taken on *Larrea mexicana* [=*tridentata*], June 30, 1921, by E. P. Van Duzee.

HIPPOMELAS (GYASCUTUS) DIANAE HELFER

Helfer (1954) described this species from a long series of adult specimens from Palm Springs and Whitewater, Riverside Co., California mostly in July, stating that they were consistently taken on *Ephedra*. Most of the types and other specimens studied by him are housed in collections of the Essig Museum of Entomology (CIS) and the California Academy of Sciences (CAS). Confirming a preference for *Ephedra*, we have examined material in the collection of Arizona State University as follows: 9 miles west of Winterhaven, Imperial Co., California, June 3, 1968 (R. Nevelyn) on *E. trifurca* 18 miles southeast of Parker, Yuma Co., Arizona, May 14 and 18, 1966 (J. H. Davidson, J. M. Davidson, and M. A. Cazier) on *E. trifurca*, and 67 miles north of San Felipe, Baja California, Mexico, June 6, 1968 (N. Leppla, J. Bigelow, M. A. Cazier and J. Davidson) on *E. trifurca*. In addition, the ASU collection contains two specimens each from Algodones Dunes, Imperial Co., California on *Larrea tridentata*, June 3, 1970 (M. A. Cazier, O. Francke and L. Welch) and 16 miles west of Winterhaven, Imperial Co., California, July 12, 1966 (J. M. Davidson and M. A. Cazier) on *Eriogonum deserticola*. D. S. Verity (*in litt.*) collected seven specimens

of this species on *Acacia* at Palm Springs, Riverside Co., California, June 22 and 23, 1957 and seven more 2 miles south of Palm Desert, Riverside Co., June 30, 1957.

HIPPOMELAS (GYASCUTUS) COMPACTA CASEY

A specimen in the collection of the California Academy of Sciences identified as this species by E. C. Van Dyke, was collected on mesquite [*Prosopis*] at San Pedro Bay, Gulf of California, July 7, 1921 by E. P. Van Duzee.

HIPPOMELAS (GYASCUTUS) INSULARIS HELFER

Although Helfer (1953) does not mention the fact, some of the specimens in the type series (CAS) from San Marcos Island [anglicized to "Marcus Island" by Helfer], Gulf of California, June 19, 1921, collected by E. P. Van Duzee, bear the label "ex *Larria* (sic) *mexicana*" [=*Larrea tridentata*].

HIPPOMELAS (GYASCUTUS) FULGIDA BARR

Barr (1969, 1971) has reported finding larvae and a dead adult of *H.* (*G.*) *fulgida* Barr in the roots of shadscale, *Atriplex confertifolia* in Elmore Co., Idaho. However, adults were also found on foliage of willow (*Salix* sp.), sweet clover (*Melilotus alba*) and Russian thistle (*Salsola kali*). These were regarded by him as visitation rather than true host records (although he did not speculate on the reasons for the visitation, it is possible that in one or more of the instances cited it may have been for the purpose of adult feeding). Barr also added the observation that many specimens had been taken from Japanese beetle traps, providing the first record of the response of a buprestid beetle to this type of chemical attractant.

HIPPOMELAS (GYASCUTUS) JUNIPERINUS (WICKHAM)

Described from three specimens beaten from juniper in July on Chadburn's Ranch in the foothills of the Pine Valley Mountains, about 22 miles from St. George, Utah, at an altitude of about 4500 feet. We are not aware of further published plant associations nor have we seen specimens bearing host data.

HIPPOMELAS (GYASCUTUS) OBLITERATA (LECONTE)

Horn (1866, 1868) reported that this species occurs rather abundantly during the summer "on the low willows that are so plentiful in the Owens Valley [California]." This observation was apparently veri-

fied by J. W. MacSwain who captured nearly 250 specimens on willow (*Salix* sp.) at Antelope Springs, Inyo Co., California on July 17, 1953 (CIS, Helfer det.). However, Nelson (*in litt.*) who examined the MacSwain specimens and also collected a long series of specimens at this locality himself does not regard them as *obliterata*, the type of which he has seen, but as close to or part of the *H. fulgida-H. lariversi* Barr complex.

Fall (1901) and Van Dyke (1942) have recorded the occurrence of the beetles on flowers of mesquite (*Prosopis juliflora*) at Banning, California, in July. Chamberlin (1926) lists this plant as the host for the species and Van Dyke (1942) reiterates that it is normally found about mesquite (*Prosopis*). Wickham (1905), without being specific stated that it was found on several desert shrubs. Kunze (1904) observed adults on little-leaf palo-verde (*Cercidium microphyllum*) (listed as *Parkinsonia*) in Arizona. He remarked that this buprestid, "heavily dusted with yellow powder, and the ground or body color being of a greenish-gray, is found on young "Palo Verde," the stems of which are bright green. Under a glaring hot sun in May or June this beetle is very alert, and a silken net is soon torn to pieces by the long thorns of this shrubby tree. The bark and thorns of very young "Palo Verde" much resemble *obliteratus*."

All of these records may require revision when the taxonomic status of *H.* (*G.*) *obliterata* is clarified.

HIPPOMELAS (GYASCUTUS) PACIFICA CHAMBERLIN

Adults of this species were captured on *Atriplex polycarpa* in late June and early July at a locality 5 miles south of Kettleman City, Kern Co., California (Nelson, 1962). The species had been reported previously as having been collected on "sagebrush" (Chamberlin, 1938). A "cotype" bearing this label is in the collection of the California Academy of Sciences.

HIPPOMELAS (GYASCUTUS) PLANICOSTA (LECONTE)

The first plant association record for this species known to us is that of Townsend (1893) who in a report on some insects of New Mexico stated "This large buprestid was found July 8 on mesquite bushes (*Prosopis juliflora*) and later on flowers of the same. On July 17 great numbers were seen on flowers of *Larrea mexicana* [=*L. tridentata*] or Creosote Bush. When found on the flowers they are covered with pollen, giving them a rich yellow color." In 1895, he reiterated that the species was common at Las Cruces, New Mexico on *Larrea* and mes-

quite. Wickham (1905) stated that it frequents especially the bushes of *Larrea* [*tridentata*]. Smyth (1934) also confirmed the association with *Larrea*, stating that they usually carried pollen upon the thorax and forepart of the elytra and commented that when alarmed they sometimes flew straight up into the air to a height of a hundred feet or more, then took off with the wind. Hurd and Linsley (1975) reported that it was the most abundant species of *Hippomelas* encountered by them at flowers of *Larrea* in southeastern Arizona and New Mexico during the summer-fall blooming period (after the arrival of the summer rains). They also reported that in southern California it has been taken in June and July on *Larrea* when the plants are not in bloom and thus they are believed to be the larval host. They added that during this off-season, J. W. MacSwain took long series from *Atriplex* at Blythe, Riverside County, California, although these may ultimately prove to be a different species.

Plant associations listed on specimens at hand are as follows:

Larrea tridentata: New Mexico (Granite Gap, Peloncillo Mts., Hidalgo Co., July 2, 1965, J. H. and J. M. Davidson and M. A. Cazier) (ASU); Arizona (Diamond Creek and Colorado River, Mojave Co., June 18, 1972, M. Kolner (ASU); 9 miles SE of Bell Butte, Tempe, Maricopa Co., June 20, 1972, M. Kolner (ASU); 6 miles S of Parker, Yuma Co., July 22, 1967, J. H. and J. M. Davidson and M. A. Cazier; vicinity of Portal, Cochise Co., various dates in June, July, August and September, M. A. Cazier, E. G. and J. M. Linsley) (CIS); Nevada (Overton, August 22, 1930, E. W. Davis) (CAS); California (Midway Well, Death Valley, Inyo Co., June 11, 1970, M. A. Cazier, O. Francke, L. Welch (ASU); 5.2 miles S of Saratoga Springs, Inyo Co., June 12, 1970, M. A. Cazier, O. Francke, L. Welch (ASU); Indian Wells, Riverside Co., June 6, 1970, M. A. Cazier and O. Francke (ASU); Oasis Station, Riverside Co., June 20, 1956, M. Wasbauer (CIS); Saltdale, Riverside Co., June 8, 1940, K. S. Hagen (CIS); 8 miles NW Palm Springs, Riverside Co., July 28, 1956, M. Wasbauer (CIS); Whitewater, Riverside Co., July 9, 1950, P. D. Hurd, Jr. (CIS); 2 miles S of Bard, Imperial Co., September 15, 1951, W. L. Swisher) (CIS); Baja California, Mexico (67 mi N of San Felipe, June 6, 1968, N. Leppla, J. Bigelow, M. A. Cazier, J. Davidson) (ASU).

Prosopis juliflora: Arizona (9 miles SE Bell Butte, Tempe, Maricopa Co., June 21, 1972, Donna and Martin Kolner) (ASU); California (Winterhaven, Imperial Co., July 12, 1966, J. M. Davidson and M. A. Cazier) (ASU).

Atriplex (various species): New Mexico (White Sands, National Monument, Otero Co., June 29, 1947, C. P. Strand (CAS); Arizona (2 miles NE Portal, Cochise Co., August 5, 1965, J. Hand, J. M. Davidson and M. A. Cazier) (ASU); California (Blythe, Riverside Co., July 4, 1951, J. W. MacSwain and R. F. Smith) (CIS); Palo Verde, Riverside Co., July 11, 1966, J. M. Davidson and M. A. Cazier) (ASU).

Tamarix pentandra: Utah (Lime Creek, 8 miles N Mexican Hat, San Juan Co., June 29, 1974, L. Draper, O. Francke, M. A. Cazier) (ASU); Arizona (1 mile SW Marble Canyon, Coconino Co., July 9, 1967, J. H. and J. M. Davidson and M. A.

Table 1. Plant associations.

Plants	Beetles
Cupressaceae	
Juniperus californicus	*Hippomelas carolinensis*
Juniperus sp.	*H. juniperinus*
Ephederaceae	
Ephedra sp.	*H. dianae*
Ephedra trifurca	*H. dianae*
	H. imperialis
Salicaceae	
	H. cuneata
Salix spp.	*H. fulgida*
	H. obliterata
Polygoniaceae	
Eriogonum deserticola	*H. dianae*
	H. imperialis
Eriogonum fasciculatum	*H. carolinensis*
Chenopodiaceae	
Atriplex sp.	*H. planicosta*
Atriplex confertifolia (larval host)	*H. fulgida*
Atriplex polycarpa	*H. pacifica*
Salsola kali	*H. fulgida*
Leguminosae	
Acacia greggii	*H. carolinensis*
	H. planicauda
	H. caelata
Acacia constricta	*H. caelata*
Acacia vernicosa	*H. planicauda*
	H. dianae
Acacia sp.	
Mimosa sp.	*H. planicauda*
Mimosa dyscocarpa	*H. planicauda*
Prosopis sp.	*H. compacta*
	H. cuneata
	H. obliterata (?)
Prosopis juliflora	*H. caelata*
	H. cuneata
	H. planicosta
	H. sphenica
Prosopis pubescens	*H. cuneata*
Cercidium microphyllum	*H. obliterata* (?)
Cercidium floridum	*H. caelata*
Melilotus albus	*H. fulgida*
Dalea spinosa	*H. planicosta*

Table 1. (Cont.)

Plants	Beetles
Zygophyllaeeae	
Larrea tridentata	*H. carolinensis*
	H. castanea
	H. cuneata
	H. dianae
	H. insularis
	H. planicosta
	H. sphenica
Euphorbiaeeae	
Croton sp. (larval host)	*H. carolinensis*
Tamarieaeeae	
Tamarix pentandra	*H. planicosta*
Tamarix sp.	*H. carolinensis*
Compositae	
Encelia sp. (larval host)	*H. carolinensis*

Cazier (ASU); Cliff Dwellers Lodge, Coconino Co., July 8, 10, 1967, J. H. and J. M. Davidson and M. A. Cazier) (ASU).

Dalea spinosa: California (16 miles S of Vidal, Riverside Co., July 14, 1966, J. M. Davidson and M. A. Cazier) (ASU).

In terms of numbers, 16 collections from *Larrea* are represented by 62 individuals, 3 collections from *Atriplex* by 58 individuals, two collections from *Prosopis* by 4 individuals, two collections from *Tamarix* by 5 individuals and the collection from *Dalea* by a single specimen.

HIPPOMELAS (HIPPOMELAS) PLANICAUDA CASEY

Although we have not found plant associations for this species in the literature, of 23 specimens before as bearing plant records 18 are from *Mimosa*, 3 from *Prosopis* and two from *Acacia*. The collection data as follows: Tucson, Pima Co., Arizona, "on cat claw [*Acacia greggii*], October 5, 1935 (O. Bryant) (CAS); Santa Rita Experiment Station, Pima Co., Arizona, elev. 4400 ft., *Mimosa dyscocarpa*, September 5, 1970, Martin Kolner (ASU); Madera Canyon, Santa Rita Mts., Arizona, elev. 4500 ft., *Mimosa* sp., September 3, 1964, W. Turner (ASU); Santa Rita Mts., Arizona, Sept. 4, 1934, *Mimosa*, D. K. Duncan (ASU); and one mile E of Portal, Cochise Co., Ariz., *Acacia vernicosa*, August 18, 1957, J. A. Chemsak and B. J. Rannells (CIS).

Nelson (*in litt.*) confirms that in his experience this species has been consistently taken on *Acacia*. The adults superficially resemble those of *H. (H.) sphenica*.

HIPPOMELAS (HIPPOMELAS) SPHENICA (LECONTE)
(Figure 2)

The first record of a plant association for *Hippomelas sphenica* is apparently that of Griffith (1900), who, in discussing the Coleopterous fauna of the Salt River Valley, Arizona, reports finding the species in November, stating that "so closely does it resemble the branches of the mesquite that it requires close searching to find them." However, the most informative statement about the habits of the beetles is that of Vogt (1949) who observed them in the Lower Rio Grande Valley of Texas. He reported as follows: "very common on mesquite, especially on decadent and fresh cut trees where brush is being cleared. Females were often seen ovipositing in dead mesquite snags. These beetles seem to feed freely on mesquite foliage as evidenced by their copious green-colored fecula. Fresh emerged specimens lack the characteristic yellow pulverulence which seems to be a secretion accumulating with age. Evidently pulverulence, as it generally occurs among the Buprestidae, is of this nature; therefore, the variations in the definition of the pulverulent markings in this family. It is pointed out, however, that the pubescence associated with such markings is apparently unaffected by age but rather by abrasion." Hurd and Lindsley (1975) while confirming that the species is ordinarily associated with mesquite in the San Simon Valley of Arizona and New Mexico report that it also feeds occasionally at flowers of *Larrea tridentata.*

Garnett (1918) records the capture of a wasp (probably *Cerceris*) near Barstow, California, carrying a small specimen of *H. sphenica*, although the identification of the beetle is doubtful (Verity, *in litt.*).

Although we have collected this species from mesquite (*Prosopis juliflora*) on a number of occasions, it was not until an hour before sunset on September 2, 1975, at the San Xavier Mission, near Tucson, Pima Co., Arizona that we encountered them in such large numbers that it was possible to make a few observations on adult behavior. The sky was broken to the west providing intermittent sun and the temperature ranged from 22 degrees C to 20 degrees C. The beetles were flying to low growing living mesquite plants, mostly less than 8 ft. tall in a low area adjacent to cultivated fields, mostly planted to cotton. The beetles ranged from one or two per plant to 12 or 15. Both sexes were represented and were mostly resting on stems or feeding on foliage, confirming the conclusion of Vogt based upon the color of their feces. Nearly all of the plants exhibited extensive feeding damage. During the brief periods when the rays of the sun were unobscured the beetles were more

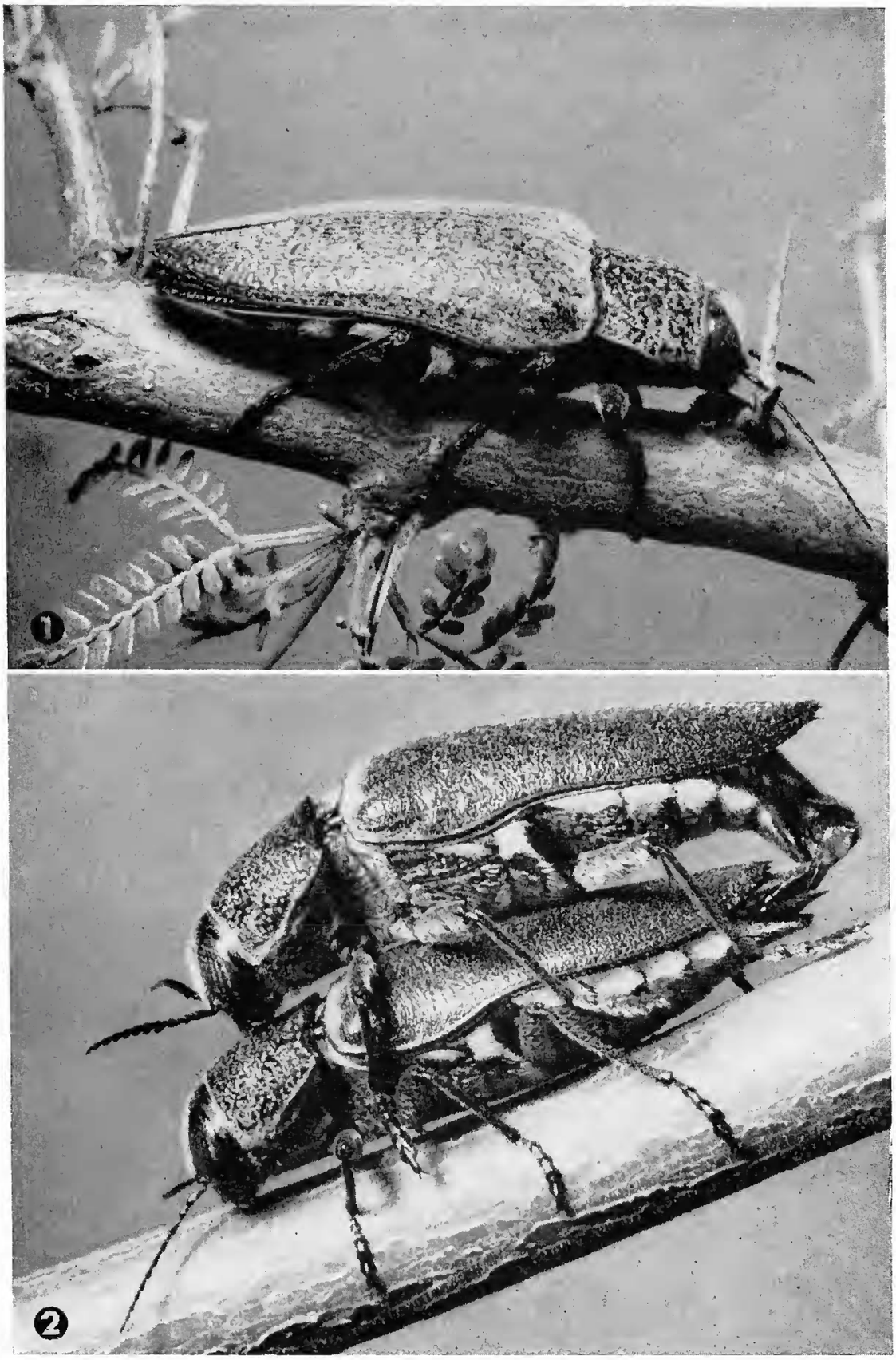

FIG. 1. Female of *Hippomelas caelata* on stem of living *Acacia vernicosa*, nr. Fairbank, Arizona, July 1965 (E. S. Ross).

FIG. 2. Mating pair of *Hippomelas sphenica* on stem of living *Prosopis juliflora*, at San Xavier Mission nr. Tucson, Arizona, after sunset, September 3, 1975 (E. S. Ross).

active in moving over the stems and leaves, flying about the plants and were more easily disturbed. However, when they were more quiescent they were difficult to see unless silhouetted against the sky because of their cryptic coloration and the fact that they would move to the opposite side of the branch when approached. Although most individuals observed were solitary, some mating was taking place (Fig. 2). Males would crawl over individuals of either sex testing receptivity by probing with the aedeagus.

Specimens available with plant association data are as follows: 2.5 miles NE Portal, Cochise Co., Arizona, *Prosopis juliflora*, July 29, 1959, E. G. Linsley (CIS); 2 miles NE Portal, Arizona, *Prosopis juliflora*, August 18, 1965, J. H. and J. M. Davidson and M. A. Cazier (ASU); 1 mile E Portal, Arizona, *Acacia vernicosa*, August 18, 1957, J. A. Chemsak and B. J. Rannells (CIS); Portal, Arizona, *Prosopis juliflora*, August 15, 1958, E. G. Linsley (CIS); San Xavier Mission, Pima Co., Arizona, *Prosopis juliflora*, September 2, 1975, E. G. and J. M. Linsley and E. S. Ross (CA5, C15); Madera Canyon, Santa Rita Mts., Pima Co., Arizona, mesquite [*Prosopis*], September 2, 1950, W. L. Swisher (CAS); and 9 miles NNW Santa Rita Experiment Station, elevation 4150, *Prosopis juliflora*, August 23, 1971, Martin Kolner (ASU).

HIPPOMELAS (STICTOCERA) CAELATA (LECONTE)

(Figure 1)

Chamberlin (1926) records the host of this species as Palo Verde (*Cercidium floridum*) and Van Dyke (1942), apparently following Chamberlin, states that "it breeds in a number of desert trees like the Palo Verde (*Cercidium floridum*)." However, this association is certainly doubtful and we regard it as regularly attached to *Acacia*. Cazier (1951) reported the species rather common on *Acacia* at a number of localities in north central Mexico and we have consistently found it on *Acacia constricta* and *A. vernicosa* in southeastern Arizona. In addition to our own collections, representative data from material before us is as follows: Granite Pass, Peloncillo Mts., Hidalgo Co., New Mexico, *Acacia constricta*, August 6, 1963 and August 27, 1969, A. Raske (ASU); same locality and host plant, August 31, 1965, J. H. and J. M. Davidson and M. A. Cazier (ASU); same locality, *Acacia greggii*, July 21, 1965, A. Raske (ASU); Lake Cienega, Hidalgo Co., New Mexico, *Prosopis juliflora*, July 24, 1964, J. M. Pickle, M. Mortensen and M. A. Cazier (ASU); 3 miles E of Portal, Cochise Co., Arizona, *Acacia constricta*, August 16, 1965, J. H. Davidson and M. A. Cazier (ASU); Tombstone, Cochise Co., Arizona, *Acacia vernicosa*, August 17, 1957,

J. A. Chemsak and B. J. Rannells (CIS); same locality, *Acacia*, August 13, 1940, W. L. Swisher (CAS); and one mile south of Santa Ana, Sonora, Mexico, on *Acacia constricta*, September 14, 1953, N. A. Lewis (CAS).

HIPPOMELAS (PRASINALIA) CUNEATA (HORN)

The first published plant association for this species known to us is that of Smyth (1934) who reported collecting a series of forty examples in an hour's time from bull's horn *Acacia* (probably *A. cornigera*) near Salina Cruz, Isthmus of Tehuantepec, Mexico in August. Subsequently, Nelson (1959) recorded finding adults abundant on *Prosopis chilensis* [*juliflora*] and *Acacia greggii* at Morong Valley, San Bernardino County, California in July. Material at hand yields the following additional information: Thermal, Riverside Co., California, on dead *Prosopis*, June 18, 1940, W. F. Barr (CAS); Borrego Valley, California, *Prosopis*, June 6, 1946, Donald Davis (CAS); 2 miles S. of Bard, Imperial County, California, on mesquite [*Prosopis*], September 22, 1951, W. L. Swisher (CAS); 0.9 miles SE of Bell Butte, Tempe, Maricopa Co., Arizona, *Prosopis juliflora*, July 21, 1972, Donna and Martin Kolner(ASU); 3 miles S of Parker, Yuma Co., Arizona, 3 examples on dead *Prosopis juliflora*, July 9, 1966, J. M. Davidson and M. A. Cazier (ASU); same locality, date and collectors, *Prosopis pubescens*; same locality, one example on dead *Prosopis juliflora*, July 14, 1966, Davidson and Cazier (ASU); and 6 miles south of Parker, Arizona, *Larrea tridentata*, July 21, 1967, J. H. and J. M. Davidson and M. A. Cazier (ASU). D. S. Verity (*in litt.*) reports collecting 25 examples of this species on *Salix* at Lost Hills, Kern Co., California, July 2, 1956, four at Barstow, San Bernardino Co., California, July 7, 1963, and six at Victorville, San Bernardino Co., July 13, 1963.

Nelson (*in litt.*) states that the most abundant he has ever seen this species was in Kern Co., 4 miles E of Lost Hills, on June 25, 1961 where he collected 80 specimens from one *Prosopis juliflora* tree that was approximately a quarter of a mile from any other such trees. These specimens were collected within 45 minutes.

HIPPOMELAS (PRASINALIA) IMPERIALIS BARR

When describing this species, Barr (1969) recorded two occasions on which adults were collected from plants of *Eriogonum deserticola* on the eastern slopes of the Imperial Valley, California. Subsequently, Walters (1975) has found it on this same plant 5 miles west of Glamis, Imperial County, California in mid-June. Verity (*in litt.*) collected an example

on *Ephedra*, 4 mi. west of Gordons Wells, Riverside Co., California on July 8, 1972.

LITERATURE CITED

BARR, W. F. 1969. New species of *Hippomelas* and *Acmaeodera* from Western North America (Coleoptera: Buprestidae). J. Kansas Entomol. Soc., 42:321–335, 2 figs.

BARR, W. F. 1970. The subgenera of *Nanularia* and *Hippomelas* (Coleoptera: Buprestidae). Occasional Papers, Biol. Soc. Nevada, 25:1–8.

BARR, W. F. 1971. Family Buprestidae, in Hatch, M. H., The Beetles of the Pacific Northwest, 5:55–89.

BEER, F. M. 1940. Notes on some Buprestidae of southwestern Oregon (Coleoptera). Pan-Pac. Entomol. 16:13–16.

BEER, F. M. 1944. Notes on the hosts, habits and distribution of Oregon *Acmaeodera* (Coleoptera, Buprestidae). Pan-Pac. Entomol., 20:105–109.

CAZIER, M. A. 1951. The Buprestidae of North Central Mexico (Coleoptera). Amer. Mus. Novitates, no. 1526, pp. 1–56, 51 figs.

CHAMBERLIN, W. J. 1926. The Buprestidae of North America exclusive of Mexico. A catalogue including synonymy, bibliography, distribution, type locality and hosts of each species. Corvallis, Oregon, 289 pp. + index.

CHAMBERLIN, W. J. 1938. New Buprestidae from California. J. New York Entomol. Soc., 46:445–447.

FALL, H. C. 1901. List of the Coleoptera of southern California with notes on habits and distribution and descriptions of new species. Occasional Papers Calif. Acad. Sciences, 8:1–282.

GARNETT, R. T. 1918. Beetle, *Hippomelas sphenicus*, prey of wasp (Col.), Entomol. News, 29:142.

GRIFFITH, H. G. 1900. Coleopterous fauna of Phoenix, Arizona, and surrounding regions. Entomol. News, 11:561–570.

HELFER, J. R. 1953. Two new *Hippomelas* (Coleoptera: Buprestidae). Pan-Pac. Entomol., 29:34–36.

HELFER, J. R. 1954. A new *Hippomelas* from California (Coleoptera: Buprestidae). Pan-Pac. Entomol., 30:117–118.

HORN, G. H. 1866. Notes on the habits of a few California Coleoptera. Proc. Entomol. Soc. Philadelphia, 6:289–293.

HORN, G. H. 1868. New species of Coleoptera from the Pacific District of the United States. Trans. American Entomol. Soc., 2:129–140.

HORN, G. H. 1883. Miscellaneous notes and short studies of North American Coleoptera. Trans. American Entomol. Soc., 10:269–312.

HURD, P. D., JR. AND LINSLEY, E. G. 1975. Some insects other than bees associated with *Larrea tridentata* in the southwestern United States. Proc. Entomol. Soc. Washington, 77:100–120.

LINSLEY, E. G. AND E. S. ROSS. 1940. Records of some Coleoptera from the San Jacinto Mountains, California. Pan-Pac. Entomol., 16:75–76.

KNULL, J. N. 1925. The Buprestidae of Pennsylvania (Coleoptera). Ohio State Univ. Studies, 2:1–71, 35 figs., 10 plates.

KUNZ, R. E. 1904. Protective resemblance. Entomol. News, 15:239–244.

NELSON, G. H. 1959. Notes on the Buprestidae. Bull. Brooklyn Entomol. Soc., 54:21–24.

NELSON, G. H. 1962. Notes on the Buprestidae: Part III. Bull. Brooklyn Entomol. Soc., 57:56–60.

SMYTH, E. G. 1934. The gregarious habit of beetles. J. Kansas Ent. Soc., 7:102–118.

TOWNSEND, C. H. T. 1893. Biologic notes on New Mexico Insects. Insect Life, 5:37–40.

TOWNSEND, C. H. T. 1895. On the Coleoptera of New Mexico and Arizona, including biologic and other notes. Can. Entomol. 27:39–51.

VAN DYKE, E. C. 1942. Contributions toward a knowledge of the insect fauna of Lower California. No. 3. Coleoptera: Buprestidae. Proc. Calif. Acad. Sci., (4) 24:97–132, pls. 6–7.

VOGT, G. B. 1949. A biologically annotated list of the Buprestidae of the Lower Rio Grande Valley, Texas. Ann. Entomol. Soc. Amer., 42:191–202.

WALTERS, G. C., JR. 1975. Notes on the distribution and biology of certain Buprestidae (Colcoptera): Part I. Coleopterists Bull., 29:69–70.

WICKHAM, H. F. 1905. New species of Coleoptera from the western United States. Can. Entomol., 37:165–171.

EDITORIAL NOTICE

With this issue of the Pan-Pacific Entomologist, the editorship changes hands. We are certain that the members of The Pacific Coast Entomological Society and other suscribers to the journal join us in thanking the retiring editor, John Doyen and his staff, consisting of John Chemsak, Assistant Editor, and Rollin Coville, Editorial Assistant. For three years John voluntarily served us in a truly professional manner, producing our publication while employing his own high standards of quality and scientific expertise. We are sincerely grateful to John and his staff for their efforts on our behalf.—Editors.